ABSTRACT OF THE DISCLOSURE

A data processing system participating in two-phase transaction processing operations which, when a system failure occurs while one or more transactions are in process, can successfully rebuild "in-doubt" states even when another system failure occurs during an attempt to effect the rebuild. The system includes a file management system having exclusive access to reserved locations in the memory for reading and writing meta-data therein and physical file access logic selectively coupling the memory and the database access application, the physical file access logic incorporating file protections which are controlled by the file management system; such that, in the event of a failure, the local state of the transaction can be faithfully rebuilt after restart by accessing the meta-data. Upon restart after a failure, the results of incomplete non-"in-doubt" transactions are removed, the files which have been updated by "in-doubt" transactions are locked and normal access to the affected database is then permitted.